

# Engineering

Coordinator: Associate Professor D'Amato

Engineers have the opportunity to be of profound service to humanity. Engineering means problemsolving. Through the application of mathematics and science, an engineer may be solving problems dealing with energy, space exploration, environmental issues, product manufacturing, construction or any number of interesting areas of study. Possible engineering degrees include: aerospace engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, environmental engineering, industrial engineering, materials science and engineering, mechanical engineering, nuclear engineering, and textile engineering.

The unique dual degree engineering programs at Elon support students in working toward two degrees: one from Elon and one from an engineering university. Elon currently has an affiliation with North Carolina State University (NCSU), Virginia Polytechnic and North Carolina A&T State University. The student will complete three years at Elon. These years will include a full array of science, mathematics, computer science and general studies courses along with their discipline-specific courses. Also included will be engineering courses every fall and spring taught by engineering faculty. After these three years at Elon, the student will transfer to an affiliated engineering university for two more years. Upon completion of these five years (three at Elon and two at an affiliated engineering university), a student will receive a B.S. degree from Elon in engineering physics, environmental engineering, or engineering mathematics or a B.A. degree in chemistry or computer science/engineering, and a B.S. degree from the engineering school in an engineering area of choice. Students must complete Elon's General Studies Program requirements and one of the options listed below.

All dual degree engineering programs require the following **core courses**:

CHM 111	General Chemistry I	3 sh
CHM 113	General Chemistry I Lab	1 sh
CHM 112	General Chemistry II	3 sh
CHM 114	General Chemistry II Lab	1 sh
PHY 113	General Physics I with Calculus	4 sh
PHY 114	General Physics II with Calculus	4 sh
MTH 121	Calculus and Analytic Geometry I	4 sh
MTH 221	Calculus and Analytic Geometry II	4 sh
MTH 321	Calculus and Analytic Geometry III	4 sh
MTH 421	Differential Equations	4 sh
CSC 130	Introduction to Computer Science	4 sh
<b>TOTAL</b>		<b>36 sh</b>

**Engineering Foundations**

EGR 101	Introduction to Engineering	1 sh
EGR 102	Introduction to Engineering Graphics and Design	2 sh
EGR 206	Engineering Mechanics - Statics	3 sh
EGR 208	Engineering Mechanics - Dynamics	3 sh
EGR/PHY 211	Circuit Analysis	3 sh
EGR/PHY 212	Circuit Analysis Lab	1 sh
EGR/PHY 310	Engineering Thermodynamics	4 sh
<b>TOTAL</b>		<b>17 sh</b>

The student will select one of the following five options

***I. Engineering Physics***

PHY 213	Introduction to Modern Physics	4 sh
PHY 311	Classical Electrodynamics	4 sh
8 sh of physics at the 300-400 level (excluding PHY 305)		8 sh
<b>TOTAL</b>		<b>16 sh</b>

***II. Engineering Mathematics***

MTH 241	Discrete Structures	4 sh
MTH 311	Linear Algebra	4 sh
MTH 312	Abstract Algebra	4 sh
MTH 341	Probability Theory and Statistics	4 sh
MTH 415	Numerical Analysis	4 sh
CSC 230	Algorithm Development	4 sh
<b>TOTAL</b>		<b>24 sh</b>

***III. Computer Science/Engineering***

MTH 241	Discrete Structures	4 sh
CSC 230	Algorithm Development	4 sh
CSC 331	Algorithm Analysis	4 sh
CSC 342	Computer Organization	4 sh
CSC 351	Theory of Computation	4 sh
CSC 441	Computer Architecture & Operating Systems	4 sh
<b>TOTAL</b>		<b>24 sh</b>

In addition, one upper-level course in programming languages at another institution (if electrical or computer engineering). For another engineering degree, an additional upper level CSC course is required.

***IV. Chemistry/Chemical Engineering***

CHM 125	The Chemical Literature	1 sh
CHM 205	Inorganic Chemistry I	4 sh
CHM 211	Organic Chemistry I	3 sh
CHM 213	Organic Chemistry Lab I	1 sh
CHM 212	Organic Chemistry II	3 sh
CHM 214	Organic Chemistry Lab II	1 sh
CHM 311	Quantitative Analysis	4 sh
CHM 332	Physical Chemistry I	4 sh
CHM 461	Senior Seminar	1 sh
<b>TOTAL</b>		<b>22 sh</b>

***V. Environmental Studies/Environmental Engineering***

POL 224	Environmental Policy and Law	4 sh
REL 348	Environmental Ethics	4 sh

ENS 461	Senior Seminar	4 sh
CHM 211/213	Organic Chemistry I w/Lab	4 sh
BIO 112/114	Intro Population Biology w/Lab	4 sh
BIO 452	General Ecology	4 sh
ENS 215	Organismal Biology and Field Techniques	4 sh
ENS 381	Internship (during summer)	2-4 sh
CE 323	Earth Systems Chemistry @ NCSU	4 sh
CE 373	Fundamentals. of Environmental Engineering @ NCSU	3 sh
ST 370	Probability and Statistics for Engineers @ NCSU	3 sh
<b>TOTAL</b>		<b>40-42 sh</b>

**EGR 101. INTRODUCTION TO ENGINEERING***1 sh*

This course provides general information on engineering disciplines, common engineering practices, the engineering profession and history, engineering education, engineering design, engineering ethics, and engineering opportunities from the instructor and/or invited speakers. Preliminary work on a design project will be undertaken by student teams. Offered fall.

**EGR 102. INTRODUCTION TO ENGINEERING GRAPHICS AND DESIGN***2 sh*

This course introduces the student to graphics as used by engineers. Both hand sketching and computer graphics will develop the student's ability to communicate graphically. This course also investigates the engineering design process. Students will work in teams to acquire a client and design a solution to meet the needs enumerated by this client. This design project is a continuation of design work done in EGR 101. Each aspect of the design process will be discussed. Several exercises will attempt to develop the student's creativity, clarity and focus of thought. The semester will end with a full presentation of each team's design work which will incorporate their newly acquired graphics ability. Offered spring.

**EGR 206. ENGINEERING MECHANICS - STATICS***3 sh*

This course is designed to introduce students to the effects of forces on bodies in static equilibrium and to familiarize them with mathematical techniques for finding reactive forces in bodies, frames, mechanics and trusses. Concepts covered include forces, moments, couples, equilibrium of rigid bodies, centroids, moments of inertia and friction resistance. Prerequisite: PHY 113. Corequisite: MTH 221. Offered fall.

**EGR 208. ENGINEERING MECHANICS - DYNAMICS***3 sh*

Kinematics and kinetics of particles in rectangular, cylindrical and curvilinear coordinate systems; energy and momentum methods for particles; kinetics of systems of particles; kinematics and kinetics of rigid bodies in two and three dimensions; and motion relative to rotating coordinate systems are studied. Prerequisites: EGR 206 and MTH 221. Corequisite: MTH 321. Offered spring.

**EGR 211. CIRCUIT ANALYSIS***3 sh*

This course is an introduction to the theory, analysis and design of electric circuits. Studies include circuit parameters and elements: voltage, current, power, energy, resistance, capacitance, inductance. Also included is the application of Kirchhoff's laws to simple and complex circuits and the study of the steady-state and transient response of circuits to pulse, step and periodic inputs. Prerequisites: MTH 421 and PHY 114. Corequisite: EGR/PHY 212. Offered spring.

**EGR 212. CIRCUIT ANALYSIS LAB***1 sh*

This course involves laboratory application of concepts and principles discussed in EGR 211. Corequisite: EGR/PHY 211. Offered spring.

**EGR 310. ENGINEERING THERMODYNAMICS**

4 sh

This course introduces the concept of energy and the laws governing the transfers and transformations of energy. Study emphasizes thermodynamic properties and First and Second Law analysis of systems and control volumes. Integration of these concepts into the analysis of basic power cycles is introduced. Prerequisites: MTH 421 and PHY 114. Offered fall.

**EGR 381. INTERNSHIP IN ENGINEERING**

1-4 sh

The internship provides advanced work experiences in some aspect of engineering. It is offered on an individual basis, under the guidance of the engineering program director, when suitable opportunities can be arranged. It will typically be taken in the summer of the sophomore year. This experience will broaden the practical work experience of the student and enhance his/her classroom abilities. Prerequisite: permission of the department.

**English**

Chair, Department of English: Professor Lyday-Lee

Professors: Angyal, Blake, Bland, Gill, Haskell, Warman

Associate Professors: Boyd, Boyle, Braye, Cassebaum, Gordon, Mackay, Schwind

Assistant Professors: Chapman, Kircher, Myers, Peebles, Rowsinski, Stephens, Strickland, Torke

Instructor: Perry

The field of English involves the theoretical study of literature, language and writing, as well as the practice of literary criticism and analysis, creative writing and other kinds of writing. The English department provides a balanced curriculum that includes all these elements. A group of six core courses in literature, language study and writing beyond the freshman level ensures that English majors have experience in the three principal areas of the discipline. In addition to the common core, the English curriculum also encourages majors to follow their own talents and interests by requiring one of four distinct concentrations: literature, professional writing and rhetoric, creative writing or English teacher licensure. Minors in literature and creative writing, along with an interdisciplinary minor in professional writing, are additional options.

**A NOTE ON THE GENERAL STUDIES LITERATURE COURSE REQUIREMENT**

With the exception of film studies courses, English department courses in the 220-279 and 320-379 range normally fulfill the General Studies literature requirement in Liberal Studies.

English department courses in the 200-219 and 300-319 range (i.e., courses in language study, writing, and creative writing) do NOT normally fulfill that requirement.

**A major in English** requires 40-42 semester hours. The core requirements, above ENG 110, are:

An ENG 200-level literature course 4 sh

(English Teacher Licensure majors must take ENG 221, British Literature I or ENG 222, British Literature II. If British Literature II is chosen, English Teacher Licensure majors MUST take EITHER ENG 342, Shakespeare: The Tragedies OR ENG 343, Shakespeare: The Comedies, as their author course.)

An ENG 200-level or above writing course (ENG 210-219; 310-319) 4 sh

(Creative Writing majors must take ENG 213, Introduction to Creative Writing)  
(English Teacher Licensure majors must take ENG 319, Writing Center Workshop.)

An ENG 200-level or above language course (ENG 200-209; 300-309) 4 sh  
 (English Teacher Licensure majors must take ENG 205, Grammar.  
 Professional Writing and Rhetoric majors should take either ENG 204 or  
 ENG 304.)

Three ENG 300-400 level literature courses:

One historical studies course (ENG 320-329) 4 sh

(English Teacher Licensure majors who do NOT take ENG  
 331, Advanced World Literature, MUST take ENG 321,  
 Classical Literature.)

One cultural studies course (ENG 330-339) 4 sh

(English Teacher Licensure majors who do NOT take ENG  
 321, Classical Literature, MUST take ENG 331, Advanced  
 World Literature.)

One author course (ENG 340-349) 4 sh

(English Teacher Licensure majors MUST take ENG 342,  
 Shakespeare: The Tragedies OR ENG 343, Shakespeare: The  
 Comedies, if they do NOT take ENG 221, British Literature I.)

Students must also complete one of the following concentrations:

***Literature Concentration***

One additional historical studies course (ENG 320-329) 4 sh

Two additional 300-400 level English electives, at least ONE of  
 which must be literature. 8 sh

Senior Seminar: Literature 4 sh

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**TOTAL 40 sh**

***Professional Writing and Rhetoric Concentration***

One theory course\* chosen from: 4 sh

- ENG 204 Survey of Professional Writing and Rhetoric
- ENG 304 Topics in Professional Writing and Rhetoric

\*Note: The theory course should be included in the core requirements.

One applied course chosen from: 4 sh

- ENG 211 Writing for the Professions
- ENG 311 Document Research, Management and Production
- ENG 318 Scientific and Technical Communication
- ENG 319 Writing Center Workshop

Two electives\* chosen from: 8 sh

- ENG 282, 381, 314, 315, 316, 317
- Possible interdisciplinary electives, with advisor's approval, may be  
 chosen from ART 263, 363; BUS 202; JCM 327, 328, 333, 387.

\*Note: English electives may also include any of the applied courses listed above.

Senior Seminar: Writing 4 sh

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**TOTAL 40 sh**

***Teacher Licensure Concentration***

ENG 302 History of the English Language 4 sh

ENG 223 American Literature I 4 sh or

ENG 224 American Literature II

A 300-400 level literature elective 4 sh

JCM 210	Public Speaking	2 sh
	Senior Seminar: Literature	4 sh
	Set of Professional education courses	35 sh
<b>TOTAL</b>		<b>77 sh</b>

***Creative Writing Concentration***

ENG 213	Introduction to Creative Writing (taken in core)	4 sh
	Other English major core courses	20 sh
ENG 366	Contemporary Writers	4 sh
	Choice of two of the following:	8 sh
	ENG 214 Creative Writing: Poetry Reading/Writing	
	ENG 314 Advanced Creative Writing: Screenplay	
	ENG 315 Advanced Nonfiction Writing	
	ENG 316 Advanced Creative Writing: Poetry	
	ENG 317 Advanced Creative Writing: Fiction	
	JCM 344 Screenwriting	
	THE 330 Playwriting	
	Senior Seminar: Creative Writing	4 sh
<b>TOTAL</b>		<b>40 sh</b>

***Double Concentrations***

Students are encouraged to pursue a double concentration, either to combine liberal arts and pre-professional training (creative writing/professional writing or literature/professional writing) or to study the interconnectedness of writing and reading (literature/creative writing). Completing a dual concentration in English requires 52 semester hours and must include a capstone experience in each concentration. For more information, see your English major advisor or the English Department chair.

**A minor in English** requires the following courses above ENG 110. Students may choose either a literature minor or one of the writing minors.

***Literature Minor***

ENG 250	Interpretations of Literature	4 sh
	One ENG language course or one ENG writing course beyond English 110	4 sh
	Three ENG literature level courses, at least two of which should be at the 300-400 level	12 sh
<b>TOTAL</b>		<b>20 sh</b>

***Writing Minors***

The writing minors are tailored to meet students' career plans and interests. The minor consists of 20 hours. Of that 20 hours, at least 12 must be from performance courses. In performance courses, the fundamental objective is the development of students' writing abilities. Theory courses focus on the theoretical study of some aspect of language and language use rather than on actual writing practice.

***Professional Writing Minor:*** See Professional Writing Studies

***Creative Writing Minors***

	Three or more of the following:	12-20 sh
	ENG 213 Creative Writing	
	ENG 214 Creative Writing: Poetry (Winter Term)	

- ENG 315 Advanced Nonfiction Writing
- ENG 316 Advanced Creative Writing: Poetry
- ENG 317 Advanced Creative Writing: Fiction
- ENG 366 Contemporary Writers
- JCM 326 Feature Writing
- THE 330 Playwriting

Zero to two of the following courses: 0-8 sh

Any English literature or foreign literature course beyond the general studies requirement

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**TOTAL** **20 sh**

**ENG 100. INTRODUCTION TO COLLEGE WRITING** 4 sh

This is a writing workshop focusing on invention, organization, revision and editing skills. A grade of "C-" or better required for admission to ENG 110. Elective credit only. Offered fall.

**ENG 106. ANALYTICAL READING** 4 sh

Analytical reading is a course designed to help students understand, analyze and retain college level reading material. Elective credit only. Offered fall.

**ENG 110. COLLEGE WRITING** 4 sh

In this first-year course emphasizing invention, peer response, revising and editing, students learn to develop and make assertions, support them with appropriate evidence and present them in public form. Students also learn that the style and content of their writing will affect their success in influencing audiences. A grade of "C-" or better required for graduation. Offered fall and spring.

**ENG 204. SURVEY OF PROFESSIONAL WRITING AND RHETORIC** 4 sh

This course is a survey of theories and practices of writing from ancient Greece to the contemporary workplace. The course prepares students to see writing broadly as a culturally situated form of social action and production. Prerequisite: ENG 110.

**ENG 205. GRAMMAR** 4 sh

This study of the English language includes the evolution of prescriptive and descriptive grammars, terminology, parts of speech and function, grammatical structures and correct usage of standard written English. Prerequisite: ENG 110.

**ENG 210. WRITING WORKSHOP** 4 sh

This course builds upon the objectives for English 110 (College Writing) and offers students the opportunity to devise their own writing projects. It provides a workshop setting for intensive practice in writing, response and revision, along with reading in the theory of writing and rhetoric. Prerequisite: ENG 110.

**ENG 211. WRITING FOR THE PROFESSIONS** 4 sh

This course introduces students to the history, technology and practice of the various forms of professional writing, and is designed for students from many different disciplines. The course focuses on transactional writing or discourse that aims to get things done: to inform, persuade or instruct people. This is the writing that goes on in the world of work. Prerequisite: ENG 110.

**ENG 213. CREATIVE WRITING** 4 sh

For this workshop, students interested in writing poems and short stories may be assigned additional texts for discussion of technique or form. Prerequisite: ENG 110. Offered fall and spring.

**ENG 214. CREATIVE WRITING: POETRY READING/WRITING** 4 sh

Along with readings of 20th century British, Irish and American poetry, students from all levels spend equal amounts of time discussing their own and others' poems. Study also includes reading quizzes, writing journals and poetry assignments. Prerequisite: ENG 110.

- ENG 221. BRITISH LITERATURE I** 4 sh  
 This study of British literature in its social and cultural contexts emphasizes the close reading of texts from the Anglo-Saxon, Medieval and Renaissance periods through the Enlightenment. Prerequisite: ENG 110. Offered fall and spring.
- ENG 222. BRITISH LITERATURE II** 4 sh  
 This study of British literature in its social and cultural contexts — from the Romantic, Victorian and Modernist periods through the present — emphasizes the close reading of texts representing the diversity of modern British literary expression. Prerequisite: ENG 110. Offered fall and spring.
- ENG 223. AMERICAN LITERATURE I** 4 sh  
 This study of American literature in its social and cultural contexts — from Colonial and Revolutionary periods through the Romantic period — emphasizes the close reading of texts to examine American literary culture from its origins to the post-Civil War era. Prerequisite: ENG110. Offered fall and spring.
- ENG 224. AMERICAN LITERATURE II** 4 sh  
 This study of American literature in its social and cultural contexts — from the post-Civil War era, Progressive and Modernist periods up to the present — involves close reading of selected texts to stress the expansion of the American literary canon. Prerequisite: ENG 110. Offered fall and spring.
- ENG 231. INTRODUCTION TO WORLD LITERATURE** 4 sh  
 This course provides an introduction to the study of selected works from European, Asian, African and Latin American literatures (in English translation) with emphasis on literary traditions and genres. Prerequisite: ENG 110. Offered spring of alternate years.
- ENG 238. AFRICAN-AMERICAN LITERATURE BEFORE 1945** 4 sh  
 This course traces the development of the themes of protest, accommodation and escapism found in the fiction, poetry and drama of African-American writers before 1945. Prerequisite: ENG 110. Offered fall of alternate years.
- 116 **ENG 239. AFRICAN-AMERICAN LITERATURE SINCE 1945** 4 sh  
 An examination of works by major African-American writers since 1945 focuses on making connections between writers. Prerequisite: ENG 110. Offered spring of alternate years.
- ENG 250. INTERPRETATIONS OF LITERATURE** 4 sh  
 Interpretations of Literature employs different critical approaches to interpret and evaluate poetry, drama and fiction from a variety of cultures. Prerequisite: ENG 110. Offered fall and spring.
- ENG 251. ENGLISH STUDIES IN BRITAIN** 4 sh  
 A study-tour based in London emphasizes the theatre and places of literary and cultural importance. The course includes excursions to such places as Stratford-upon-Avon, Stonehenge and Canterbury. This course satisfies the General Studies literature requirement. Winter term only.
- ENG 255. TOPICS IN LITERATURE** 4 sh  
 Courses taught under this number will introduce students to the study of several different genres of literature. The reading selections will explore a theme such as Urban Life, The River in Literature, Going Home, Cultures in Contact, Business and Literature. The course is especially recommended for students who are not English majors. It fulfills the General Studies literature requirement. Offered fall and spring. Prerequisite: ENG 110.
- ENG 266. LITERATURE OF TERROR AND THE SUPERNATURAL** 4 sh  
 A study of the elements of terror and the supernatural in selected literary works that are designed to inspire fear. Representative authors include Samuel Taylor Coleridge,

Edgar Allan Poe, Henry James and Stephen King. Extensive use of videos. Offered in winter. Prerequisite: ENG 110.

**ENG 282. PRACTICUM IN ENGLISH** 1-3 sh

This course provides opportunities for students to observe and record different types of writing produced in an office or business. Prerequisites: ENG 110, permission of instructor and advance arrangement. No credit toward General Studies requirements.

*LANGUAGE STUDY*

This selection of courses centers on studies in the structure and historical development of the English language and in the theory of rhetoric and composition.

**ENG 302. HISTORY OF THE ENGLISH LANGUAGE** 4 sh

This study traces the historical development of the English language from its Indo-European origins to the present. Prerequisite: ENG 110. Offered fall.

**ENG 303. LINGUISTICS** 4 sh

Linguistics is the study of the systems of language, including the phonology, morphology, semantics and varieties (social and regional) of the English language. Prerequisite: ENG 110.

**ENG 304. TOPICS IN PROFESSIONAL WRITING AND RHETORIC** 4 sh

This course will be grounded in argumentative discourse and communication principles based on ideas and teaching from contemporary and ancient rhetorical theorists. While the topical focus of the course will vary, the emphasis, as in any writing course, would include a structured process of planning: the creation of document design including the matter of language in conjunction with images and graphics. Prerequisite: ENG 110.

**ENG 305. AMERICAN ENGLISH** 4 sh

This course examines the development of American English from the 16th-century influences of Jamestown and Massachusetts settlers to Creoles developing along the Mexican border and in Florida. Study includes regional and social varieties of English, phonetics and literature that employs dialects. Prerequisite: ENG 110.

*ADVANCED WRITING*

Courses in this group are specifically designed to provide practice in different kinds of writing beyond the introductory level.

**ENG 311. DOCUMENT RESEARCH, MANAGEMENT AND PRODUCTION** 4 sh

This course introduces students to research methods, project management principles and document production processes needed for effective practice in professional writing contexts. (It emphasizes a rhetorical approach to professional writing i.e., writing is understood as a human, social action or a way of acting with and to others through written symbols.) Through hands-on course projects, students gain confidence in their ability to research, manage and produce documents in a variety of contexts. Students will acquire and practice a rhetorical stance toward professional writing. Prerequisite: ENG 110.

**ENG 314. ADVANCED CREATIVE WRITING: SCREENPLAY** 4 sh

This course focuses on the format, strategies and techniques for constructing effective, saleable, feature-length screenplays. While devoting a large share of time to traditional concerns such as plot formulation, character development and dialog, students also learn how to write letters of query, script treatments and summaries with a logline. To facilitate their emergence as effective screenwriters, students develop critical appreciation by reading and evaluating published scripts and each other's work; students also analyze significant movies. Prerequisites: ENG 110 and either ENG 213 or instructor's permission.

- ENG 315. ADVANCED NONFICTION WRITING (Selected Focus)** 4 sh  
 In this writing workshop, students develop a specific aspect of writing ability (e.g., voice, stylistics) or practice a particular type of writing (e.g., essay, biography, travel writing). Focus changes each semester. Prerequisite: ENG 110.
- ENG 316. ADVANCED CREATIVE WRITING: POETRY** 4 sh  
 This advanced workshop, centered around students' poems, also includes study of 20th century poetry (occasionally earlier) to learn poetic techniques and to recognize the many possibilities of poetic forms, subjects and voices. Prerequisite: ENG 110 and ENG 213 or permission of instructor. Offered fall.
- ENG 317. ADVANCED CREATIVE WRITING: FICTION** 4 sh  
 This advanced workshop, centered around students' stories, also includes study of 20th century fiction (occasionally earlier) to learn techniques and to recognize possibilities for point of view, characterization, structure and diction. Prerequisite: ENG 110 and ENG 213 or permission of instructor. Offered spring.
- ENG 318. SCIENTIFIC AND TECHNICAL COMMUNICATION** 4 sh  
 This course examines the complex nature and practice of scientific and technical discourse. Although open to anyone with an interest in this topic, the course is designed especially for students majoring in the sciences who want to improve the professional writing skills necessary for successful careers in their chosen fields and students majoring in writing or communication who wish to pursue careers as technical and scientific communicators. Prerequisite: ENG 110.
- ENG 319. WRITING CENTER WORKSHOP** 4 sh  
 The Writing Center Workshop enhances students' writing ability while they learn to tutor writing. Students are required to tutor four hours each week in Elon's Writing Center. Strong writing abilities and interpersonal skills recommended. Prerequisite: ENG 110. Offered fall and spring.

### HISTORICAL STUDIES

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Courses in this group explore literature in historical, interdisciplinary and cross-cultural contexts.

- ENG 321. CLASSICAL LITERATURE** 4 sh  
 This study of ancient Greek and Roman literature and culture includes authors such as Homer, Plato, Sophocles, Ovid and Virgil, with readings from mythology, the great epics of the Trojan War, drama, philosophy and lyric poetry in modern translations. Prerequisite: ENG 110. Offered fall of alternate years.
- ENG 322. MEDIEVAL LITERATURE** 4 sh  
 This study of literature and culture of the European Middle Ages includes authors such as Dante, Chretien de Troyes, Chaucer and Malory, with readings from modern translations of epics such as *Beowulf* or *The Song of Roland*, poetry about love or religious experience such as *The Divine Comedy* or narratives about adventure and chivalry, such as legends of King Arthur. Prerequisite: ENG 110.
- ENG 323. RENAISSANCE LITERATURE** 4 sh  
 This study of British and Continental literature and culture of the 16th and early 17th centuries includes authors such as Sidney, Marlowe, Montaigne, Shakespeare and Cervantes. Readings in Renaissance English from Elizabethan and Jacobean drama, sonnet sequences, lyric and narrative poems, and precursors of the modern novel, such as *Don Quixote* are covered. Prerequisite: ENG 110.
- ENG 324. ENLIGHTENMENT** 4 sh  
 This study focuses on the great works of British, Continental and American literature during an age of reason and sensibility marked by industrial, scientific and political revolutions. Prerequisite: ENG 110.

- ENG 325. ROMANTICISM** 4 sh  
Romanticism provides an interdisciplinary study of British, American and Continental Romantic literature in the context of art, music (especially opera), cultural life and intellectual history. Prerequisite: ENG 110.
- ENG 326. REALISM AND THE LATER 19TH CENTURY** 4 sh  
This study involves an interdisciplinary look at British, American and Continental literary movements (realism, naturalism, symbolism and aestheticism), including reading selected masterworks in the context of the intellectual and cultural life of the period. Prerequisite: ENG 110.
- ENG 327. 17TH CENTURY LITERATURE** 4 sh  
This study of “The Century of Genius” includes works by British and Continental authors who ushered in the modern world. Prerequisite: ENG 110.
- ENG 328. MODERNISM** 4 sh  
This interdisciplinary study of modernism as a dominant intellectual movement of the 20th century explores topics such as alienation, the artist’s role, the primitive, consciousness and the unconscious, human rights, and the postmodern. The literature is supplemented by art, music and philosophical texts. Prerequisite: ENG 110.
- CULTURAL STUDIES**  
Courses in this group emphasize the study of literature in its cultural context, often from the perspective of a particular social group. Regional, gender, ethnic and class issues are all possible concentrations.
- ENG 330. APPALACHIAN LITERATURE** 4 sh  
A survey of 19th and 20th century Appalachian poetry, short and long fiction, drama, music, film, and culture. Prerequisite: ENG 110.
- ENG 331. ADVANCED WORLD LITERATURE** 4 sh  
Advanced study of selected works of European, Asian, African and Latin American literatures (in English translation), from historical and cultural critical perspectives. Offered fall of alternate years. Prerequisite: ENG 110.
- ENG 332. LITERATURE OF THE SOUTH** 4 sh  
Emphasis is given to major 20th century writers in this study of Southern literature, its background and themes. Prerequisite: ENG 110.
- ENG 333. WOMEN IN LITERATURE: FEMINIST APPROACHES** 4 sh  
Women In Literature studies modern and traditional works of literature interpreted or reinterpreted from the perspective of feminist literary theories. Prerequisite: ENG 110.
- ENG 334. NATIVE AMERICAN LITERATURE** 4 sh  
In an introduction to American Indian literature from the 18th century through the present, study includes special emphasis on contemporary writers of the Native American Renaissance. Prerequisite: ENG 110.
- ENG 335. STUDIES IN CONTEMPORARY LITERATURE** 4 sh  
A study of contemporary literature includes such topics as the French anti-novel, absurdist drama, metafiction and “magic realism.” Prerequisite: ENG 110.
- ENG 336. HEMINGWAY AND THE EXPATRIATES** 4 sh  
A study of the life and work of expatriates in Paris immediately after World War I. Particular emphasis is given to Ernest Hemingway. Prerequisite: ENG 110.
- ENG 337. ASIAN LITERATURE OF SOCIAL CHANGE** 4 sh  
This course explores revolutionary democratic movements outside of the American tradition by studying 20th century Asian poetry, fiction and films, primarily of China and India. Offered irregularly. Prerequisite: ENG 110.

**ENG 338. THE AFRICAN EXPERIENCE IN LITERATURE** 4 sh  
 This course studies the literature of a variety of African countries in relation to Africa's cultural traditions and its transition to modernity. Genres may include fiction, plays, poems, autobiographies and oral literature. Offered spring of alternate years.  
 Prerequisite: ENG 110.

**ENG 339. AMERICAN ENVIRONMENTAL WRITERS** 4 sh  
 A study of the major American environmental and natural history writers with close attention to issues of environmental ethics, aesthetics of nature and cultural attitudes towards the environment. The authors studied are Thoreau, Muir, Leopold, Carson, Abbey, Lopez, Wilson and Snyder. The course will emphasize the growing ethical and aesthetic appreciation of nature in American culture and how the insights of environmental writers can be used to address the environmental crisis. Offered spring of alternate years. Prerequisite: ENG 110.

### AUTHOR COURSES

Courses in this group focus on the works of individual authors who have captured and continue to hold the imaginations of readers. Typical offerings include Hawthorne, Melville, Poe, Hardy, Dickinson, Cather and those listed below.

**ENG 341. CHAUCER** 4 sh  
 A close study of Chaucer's major works in the context of their medieval, intellectual and cultural background includes the greater portion of *The Canterbury Tales*, the dream visions, and *Troilus and Cressida*. Prerequisite: ENG 110.

**ENG 342. SHAKESPEARE: THE TRAGEDIES** 4 sh  
 This study of Shakespeare's tragedies examines representative works within their intellectual, cultural and theatrical contexts. Prerequisite: ENG 110.

**ENG 343. SHAKESPEARE: THE COMEDIES** 4 sh  
 This study of Shakespeare's comedies examines representative works within their intellectual, cultural and theatrical contexts. Prerequisite: ENG 110.

**ENG 344. ROBERT FROST** 4 sh  
 This study of Frost's early development as a lyric poet focuses on the close reading of his poetry, criticism and masques in the context of New England regionalism and the emergence of Modernism in American letters. Prerequisite: ENG 110.

**ENG 345. JANE AUSTEN** 4 sh  
 Background study of 18th- and 19th-century England and the development of the novel are part of this examination of the life and writings of Austen. Prerequisite: ENG 110.

**ENG 348. MARK TWAIN** 4 sh  
 This course studies the life and work of Mark Twain as an American humorist, realist and social critic. Readings include *Roughing It*, *Innocents Abroad*, *The Gilded Age*, *Life on the Mississippi*, *Huckleberry Finn* and *Pudd'nhead Wilson*, as well as selected shorter works and later writings. Prerequisite: ENG 110.

### GENRE COURSES

These courses offer studies in specific types of literature such as poetry, drama, the novel, the essay and the short story. Courses in genre include "kinds" of literature which cut across the more traditional genre labels.

**ENG 351. THE NOVEL** 4 sh  
 Focus and content vary in this course, which examines representative novels from different countries and ages. Typical emphases include the American, the British, the picaresque, the political novels and the Bildungsroman. This course sometimes carries an emphasis on gender. Prerequisite: ENG 110.

**ENG 352. DRAMA** 4 sh  
 In a study of western drama from ancient Greece to the present, representative texts are examined in their historical and cultural contexts. Prerequisite: ENG 110.

**ENG 353. POETRY** 4 sh  
 Examination of representative poetry from different cultures and ages includes at least one epic, shorter narratives, dramatic and lyric poetry. Each student selects one culture, historical period or type of poetry as the focus of an individual research project. Prerequisite: ENG 110.

**ENG 354. THE SHORT STORY** 4 sh  
 Study of the short story as a literary form spans from its origins and development by Poe, Chekhov and others to experimental contemporary writers. Typically, five or six collections by writers from a variety of cultures are read, with some attention to the problem of film adaptation. Prerequisite: ENG 110.

**ENG 355. LAUGHTER AND COMEDY** 4 sh  
 Students study the psychology of laughter and the philosophy of comedy. Prerequisite: ENG 110.

**ENG 356. THE NOVEL: BRITISH WOMEN WRITERS** 4 sh  
 This study of novels by past and present British women writers, using feminist literary theories, also covers the development of the novel as a form and the expression of women's experience in the 18th, 19th and 20th centuries. Prerequisite: ENG 110.

**ENG 357. THE LONDON THEATRE** 4 sh  
 Students see productions of Shakespearean and other classic dramas and experience more modern and contemporary plays — both fringe and mainstream — in this study of drama in The London Theatre. Prerequisite: ENG 110. Studies Abroad students only.

**ENG 358. MODERN POETRY: BRITISH AND AMERICAN** 4 sh  
 This study of British and American poetry from the first half of the 20th century includes close readings of Yeats, Auden, Frost, Stevens, Williams, Moore, H. D., Eliot and Pound. The course also addresses cultural context and radical changes in poetic forms during this period. Each student completes an extensive project (research, original interpretation, written and oral presentation) on a modern poet not studied in class. Prerequisite: ENG 110.

**ENG 359. AFRICAN-AMERICAN NOVELS** 4 sh  
 This study of novels by such writers as Baldwin, Ellison, Hurston, Walker, Wright and Morrison gives attention to gender, place, alienation and changes in forms of protest. This course satisfies the cultural studies requirement for English majors. Offered fall of alternating years. Prerequisite: ENG 110.

**SPECIAL TOPICS**

Special Topics courses involve studies of various topics, some of which fall outside the boundaries of traditional literary study.

**ENG 361. GENDER ISSUES IN CINEMA** 4 sh  
 This course explores how well film reveals gender differences between men and women. Time is spent studying gender stereotyping, the psychological accuracy of film's representations of gender and gendered behavior of film directors. This course does not fulfill the General Studies literature requirements. Prerequisite: ENG 110.

**ENG 362. FILM CRITICISM** 4 sh  
 This course emphasizes how to interpret cinema critically, using films that illustrate cultural differences, periods, and types of filmmaking and achievements in techniques and ideas of the greatest directors. This course does not fulfill the General Studies literature requirement. Prerequisite: ENG 110. (ENG 362 is the same as JCM 362).

**ENG 365. LITERATURE AND THEOLOGY**

4 sh

This course provides an interdisciplinary study focusing on relationships between literary and theological disciplines with special attention to literature illustrating various approaches to religious questions. Prerequisite: ENG 110. (ENG 365 is the same as REL 365.)

**ENG 366. CONTEMPORARY WRITERS**

4 sh

This course explores the contemporary movements in fiction, poetry and nonfiction with special attention to style and technique. This course will include significant reading as well as the production of original work. Assignments will be both creative and academic. Required for Creative Writing concentration majors, this course can also meet the General Studies literature requirement and the core literature requirement for English majors. Prerequisites: ENG 110; ENG 213, or permission of instructor.

**ENG 367. THE ARTHURIAN LEGEND**

4 sh

Course study traces the development of stories of King Arthur and the Round Table from their appearance in the early Middle Ages through the present. Genres include chronicle, poetry, fiction and cinema. Prerequisite: ENG 110.

**ENG 381. WRITING INTERNSHIP**

1-4 sh

Students have an opportunity to apply their writing skills in a business office. By permission of instructor and chair. No credit toward General Studies requirements.

**ENG 382. INTERNSHIP IN TEACHING LITERATURE**

4 sh

The student will attend a 200-level English department literature course not previously taken and will work with the professor teaching the course to develop journal prompts and quiz or discussion questions, as well as leading some class and small-group discussions. The student will also meet with the professor once a week to discuss strategies for planning the course, selection of texts, the structure of daily class sessions and the pedagogical techniques used in the course. English majors only. By permission of instructor and chair.

**ENG 398. CHILDREN'S LITERATURE**

4 sh

This course examines the fields of children's and folk literature to discover material which satisfies educational requirements for children in elementary grades. No credit toward English major/minor. Prerequisites: EDU 211, ENG 110.

**ENG 399. YOUNG ADULT LITERATURE**

4 sh

In this study of contemporary literature for young adult readers, students read texts appropriate to the adolescent, examine common themes, and apply critical approaches suitable for middle grades and secondary classrooms. Authors may include Judy Blume, Robert Cormier, S. E. Hinton, Madeleine L'Engle, Gary Paulsen, Katherine Patterson and Cynthia Voigt. Credit toward English teacher licensure. No credit toward English major/minor. Prerequisites: EDU 211, ENG 110.

**ENG 491. INDEPENDENT STUDY**

1-4 sh

*SENIOR SEMINAR, Research***ENG 492-498. SENIOR SEMINAR**

4 sh

This capstone experience for majors offers students the opportunity to engage in independent research, original writing, and coordination of previous work on theory, depending on their major concentrations. Typical seminars will focus on Literature, Creative Writing, or Professional Writing and Rhetoric. Majors in the Teacher Licensure concentration will usually take the Literature seminar, but may substitute the Creative Writing seminar if they have had significant coursework in Creative Writing. Professional Writing and Rhetoric majors will participate in a mini-internship, out of which they compose original professional documents. All writing concentration students will have portfolios evaluated by outside readers. Dual concentration majors take both applicable seminars. Prerequisite: Majors only or permission of instructor. Offered fall and spring.

**ENG 499. RESEARCH IN ENGLISH**

4 sh

This course offers students the opportunity to create an undergraduate original research project guided by a faculty mentor. A research proposal form completed by the student and faculty mentor is required for registration. Prerequisite: permission of instructor.

***Environmental Studies***

Coordinator: Assistant Professor MacFall

Professor: Angyal

Associate Professors: D'Amato, Gooch, Kingston, Redington, Sienerth, Weston

Assistant Professors: Glaesel, Hanel, Peters, Spray, Strickland, Touchette

Elon University offers a B.S. in environmental studies, taught from an interdisciplinary, holistic approach. The mission of the Environmental Studies program is to prepare an environmentally aware citizenry grounded in environmental stewardship and to begin the preparation of environmental professionals who will carry a multidisciplinary understanding of these issues into their professional lives. Life on earth depends upon a vast, interconnected web of living and nonliving elements and processes such as nutrient cycling, energy transfer, water purification, soil regeneration and atmospheric cleansing. Earth's capacity to provide these services and support to the human spirit has been strained by the demands of a growing human population. The challenge is global in nature, but solutions must be found through both global and local actions with a renewed appreciation and love for the earth. In order to guarantee future generations a quality of life equal to or better than our own, it is imperative that the new generation understand current approaches to and develop new ideas of environmental stewardship.

To develop these goals, students take a balanced core of classes grounded in ecological principles while considering the humanities, policy, economics and law as they relate to the environment. Students are challenged to consider environmental issues from many perspectives, encouraging balance between human needs and desire with the consequences of human impact on the earth. Students choose a concentration of upper-level courses consistent with their personal interests, emphasizing either field studies or the relationship between human society and the environment. The program culminates in a capstone senior seminar, in which students develop an environmental impact statement for a regional project. In addition, students are required to engage in an active internship experience and are encouraged to participate in independent research as well.

**Center for Environmental Studies**

A center has been established focusing on community outreach opportunities for students and faculty. Colleagues outside of Elon work with students and faculty on projects related to environmental issues, providing research and internship partnerships. These partnerships provide "real world" problem-solving opportunities to students, strengthening their personal and professional development.

**A Bachelor of Science degree with a major in Environmental Studies** requires the following:

PHY 110	Energy and the Environment	4 sh
ENS 111	Introduction to Environmental Science	3 sh
ENS 113	Introduction to Environmental Science Lab	1 sh
BIO 112	Introduction to Population Biology	3 sh
BIO 114	Population Biology Lab	1 sh

ENS 215	Organismal Biology and Field Techniques	4 sh
BIO 452	General Ecology	4 sh
CHM 111	General Chemistry I	3 sh
CHM 112	General Chemistry II	3 sh
CHM 113	General Chemistry I Lab	1 sh
CHM 114	General Chemistry II Lab	1 sh
ECO 201	Principles of Economics	4 sh
POL 224	Environmental Policy and Law	4 sh
ENS 381	Internship	2 sh
ENS 461	Seminar: Environmental Impact Assessment and Policy Development	4 sh
MTH 112	General Statistics	4 sh
	Choose one course from the following:	4 sh
	PHL/REL 348 Environmental Ethics	
	ENG 339 American Environmental Writers	
<b>TOTAL</b>		<b>50 sh</b>

Select one of the following two concentrations:

***Science Concentration***

CHM 211	Organic Chemistry I	3 sh
CHM 213	Organic Chemistry I Lab	1 sh
CHM 305	Environmental Chemistry	4 sh
PHY 103	Basic Concepts in Geology	4 sh
	Choose one course from the following:	4 sh
	BIO 422 Aquatic Biology	
	CHM 311 Quantitative Analysis	
<b>TOTAL</b>		<b>16 sh</b>

***Society and Environment Concentration***

ECO 335	Economics of Environmental Issues	4 sh
	Choose three courses from the following:	12 sh
	POL 328 Public Policy	
	POL 334 International Environmental Policy	
	POL 431 Policy Analysis and Program Evaluation	
	ENS 310 Environmental Issues of Southeast Asia	
	GEO 310 Development and the Environment in Latin America, Africa and South Asia	
	GEO 320 Geography of Africa	
	ENS/GEO 350 Introduction to Geographical Information Systems	
	ENG 318 Scientific and Technical Communications	
<b>TOTAL</b>		<b>16 sh</b>

A Bachelor of Science degree in Environmental Studies/Environmental Engineering: See requirements listed in Engineering.

- ENS 111. INTRODUCTION TO ENVIRONMENTAL SCIENCE** 3 sh  
 This course explores the fundamental principles of the biological and physical sciences behind natural ecosystems. The central focus is the study of ecosystem function, human impact and techniques of environmental assessments. Students consider different world views and the development of solutions. Satisfies the laboratory science requirement for General Studies. Co-requisite: ENS 113. Offered fall and spring.
- ENS 113. INTRODUCTION TO ENVIRONMENTAL SCIENCE LAB** 1 sh  
 Students will be introduced to techniques for environmental assessment. The focus is on field research as applied to environmental management. One 3-hour laboratory per week. Co-requisite: ENS 111. Offered fall and spring.
- ENS 215. ORGANISMAL BIOLOGY AND FIELD TECHNIQUES** 4 sh  
 This course examines the basic concepts of biological form and function and the fundamentals of organismal systematics, with a focus on herbaceous and woody plants, invertebrates, and microbial ecology. Students investigate the natural history of local species and their role in community dynamics. Laboratory experiences emphasize keying and identification, field methodologies of specimen collection and preservation, sampling techniques and population estimation procedures for terrestrial and aquatic ecosystems. Satisfies the General Studies lab science requirement. Prerequisites: ENS /BIO 111, BIO 112, 114. (ENS 215 is the same course as BIO 215.) Offered spring.
- ENS 310. ENVIRONMENTAL ISSUES IN SOUTHEAST ASIA** 4 sh  
 This course focuses on the environmental issues facing the island nations and the mainland countries of Southeast Asia. The major environmental problems in this region of the world include deforestation, soil erosion, habitat destruction, habitat fragmentation, water pollution from mineral extraction and industry, unsustainable harvesting practices and rising rates of disease. These issues will be examined in the context of climate, topography, vegetation, societal evolution and human history. Emphasis will be placed on the demographic, cultural, political, religious, economic and ecological reasons for the current state of the environment of Southeast Asia. Practical solutions to reduce environmental degradation and promote sustainable development will be examined. This course cannot be used to satisfy a science requirement. Offered alternate years.
- ENS 350. INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS** 4 sh  
 (Same course as GEO 350. See GEO 350 for description.) This course can be applied toward the Liberal Studies requirement for Society. It cannot be applied toward the Science requirement. Offered fall.
- ENS 381. INTERNSHIP IN ENVIRONMENTAL STUDIES** 2-4 sh  
 An internship provides work experience at an advanced level in an environmental science field. Prerequisite: junior/senior standing as an ENS major. Offered fall, winter, spring or summer.
- ENS 461. SEMINAR: ENVIRONMENTAL IMPACT ASSESSMENT AND POLICY DEVELOPMENT** 4 sh  
 Students cooperate in a semester-long project, conducting a complete field investigation of a land/water development proposal. The course provides an opportunity for the students to apply their knowledge, analytical and problem-solving skills and ethical perspectives in the creation of a report that could be used by a municipal or regional planning organization. Prerequisite: senior standing as an ENS major. Offered fall.

## Exercise/Sport Science

Chair, Department of Health Promotion, Leisure and Human Performance: Professor J.P. Brown  
 Professors: Beedle, Calhoun  
 Assistant Professors: Baker, Davis, Hall, Miller, Smith  
 Instructor: Stevens

The exercise sports science major program located within the Health Promotion, Leisure and Human Performance Department prepares graduates for careers in cardiac rehabilitation, corporate wellness, personal training and related professions. Students who wish to pursue graduate degrees may apply to physical therapy, exercise physiology and other areas of study after satisfying the appropriate prerequisites. In addition to the required core courses, students choose 24 semester hours from a selection of exercise/sports science courses.

**A major in Exercise/Sport Science** requires the following:

ESS 101	Introduction to Exercise/Sport Science	2 sh
ESS 281	Practicum	2 sh
ESS 422	Physiology of Exercise	4 sh
ESS 424	Exercise Programming	4 sh
ESS 432	Research Methods	4 sh
PED 321	Biomechanics	4 sh
HED 220	First Aid	1 sh
CHM 111*	General Chemistry I	3 sh
CHM 113*	General Chemistry I Lab	1 sh
BIO 161*	Human Anatomy	4 sh
BIO 162*	Human Physiology	4 sh
<b>TOTAL CORE REQUIREMENT HOURS</b>		<b>33 sh</b>

\*Should be completed by freshman or sophomore year.

Twenty-four additional hours chosen for the following courses: 24 sh

HED 324	Nutrition
HED 421	Chronic and Acute Diseases
PED 305	Legal Aspects (2 sh)
PED 310	Motor Learning Theory
PED 410	Organization and Administration
PED 411	Measurement and Evaluation
ATP 112	Athletic Training I
ESS 263	Structural and Functional Kinesiology
ATP 311	Introduction to Pharmacology (2 sh)
ESS 315	Advanced Strength Training Conditioning
ESS 333	Exercise Psychology
ESS 440	Exercise Biochemistry (2 sh)
ESS 441	Cellular Physiology of Nerve and Muscle (2 sh)
ESS 442	Sport Psychology (2 sh)
ESS 443	Exercise Psychophysiology (2 sh)
ESS 482	Internship

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**TOTAL** 57 sh

A minor in Exercise/Sport Science requires the following courses:

ESS 422	Physiology of Exercise	4 sh
HED 324	Nutrition	4 sh
PED 321	Biomechanics	4 sh
BIO 161	Human Anatomy	4 sh
BIO 162	Human Physiology	4 sh
<b>TOTAL</b>		<b>20 sh</b>

**ESS 101. INTRODUCTION TO EXERCISE/SPORT SCIENCE** 2 sh

This course is an overview of professions in the field of sports medicine. Career opportunities within sports medicine and allied health will be investigated. Objectives include describing various aspects of careers, determining requirements for advanced study and learning what the necessary coursework would be for applying to several professions of interest. Offered fall and spring.

**ESS 263. STRUCTURAL AND FUNCTIONAL KINESIOLOGY** 4 sh

This course is designed to increase student knowledge and exposure to the structural and functional components of human anatomy including musculoskeletal origins, insertions, actions and innervations; the ability to identify landmarks, surface markings and palpations on a live model; to describe functional movements in various sport activities and then classify and identify which muscles work together to create the motions. Emphasis will be placed on normal walking and running gait, posture, throwing, kicking and jumping. Prerequisite: BIO 161. Offered as needed.

**ESS 281. PRACTICUM IN EXERCISE/SPORTS SCIENCE** 2 sh

The practicum introduces the student to professions in sports medicine and health-related fields. Students must choose three different agencies to work in with about 27 hours at each agency. Students must turn in typed reports including a brief discussion of the experience, reflections and a critique of the experience/agency. Students may also assist with patient/client care, and/or training and shadow their supervisor. Students must make arrangements with their professor the semester before taking the practicum. Prerequisites: ESS 101, majors only. Offered fall, winter, spring and summer.

**ESS 315. ADVANCED STRENGTH TRAINING CONDITIONING** 4 sh

This course covers physical fitness testing and strength evaluation of the athlete, components of a physical conditioning program, use of commercial and free weight equipment, technique/skill demonstration, evaluation of and designing and implementing fitness/conditioning programs. The course is designed to assist students in preparation for taking the NSCA-Strength and Conditioning Specialist (CSCS) or NSCA-Certified Personal Trainer (NSCA-CPT) as well as those students preparing for the NATA-BOC athletic training exam. The course also ensures a minimal competence among practitioners from a scientific, educational and methodological perspective. Prerequisite: junior/senior status. Offered spring.

**ESS 333. EXERCISE PSYCHOLOGY** 4 sh

This course will examine applied and theoretical issues related to the psychology of physical activity. Theories of motivation and exercise behavior will be examined in relation to the increasing problems of exercise adherence and physical inactivity. Other topics that will be discussed include: the psychological benefits of exercise, personality and exercise, body image and the psychology of injury. Various techniques will be discussed in relation to motivating exercise behaviors and how to deal with special populations. This course does not fulfill requirements for a major or minor in psychology. Offered fall.

**ESS 422. PHYSIOLOGY OF EXERCISE**

4 sh

Students examine the immediate and long-term effects of exercise on the body, including the integration of various bodily systems as a result of exercise and the role of nutrition and exercise in weight management. Laboratory activities include aerobic capacity testing, blood lipid and metabolic profiles, determination of body composition and possibly adult fitness testing. This course requires a three-hour lab. Prerequisite: BIO 162. Offered fall and spring.

**ESS 424. EXERCISE PROGRAMMING**

4 sh

Students gain applied knowledge in order to evaluate, develop and supervise exercise programs for both healthy and special populations. Topics include basic terminology, risk identification, types of fitness tests, indications and contraindications to exercise, program administration and effective communication techniques. Prerequisite: ESS 422. Offered fall and spring.

**ESS 432. RESEARCH METHODS**

4 sh

Students become familiar with basic research terminology and concepts, including statistics, developing a research problem, developing the research proposal, using computer software and measurement concepts. A research paper is required. Prerequisites: senior standing; LSM 212 for LSM majors; ESS 422 for exercise/sport science majors; and ATP 329 for athletic training majors. Offered fall and spring.

**ESS 440. EXERCISE BIOCHEMISTRY**

2 sh

This course will examine the physiology that underlies the production of energy and formation of new tissues. This course will center on training-specific adaptations. Other topics explored will be: enzymes, nucleotides, bioenergetics, metabolism and protein synthesis. Various laboratory techniques will be discussed and tested. Prerequisites: BIO 162, ESS 422 or permission of the instructor. Offered fall even years.

**ESS 441. CELLULAR PHYSIOLOGY OF NERVE AND MUSCLE**

2 sh

This course will examine the physiological processes involved in neural conduction and muscle contraction. Training-specific adaptations will be central to this course of study. Other topics explored include composition of intracellular and extracellular fluids, membrane potential, generation of the action potential, experiments in excitable cell physiology, synaptic transmission, muscle contraction and cardiac muscle. Various laboratory techniques will be discussed and tested. Prerequisite: BIO 162 or permission of the instructor. Offered fall odd years.

**ESS 442. SPORT PSYCHOLOGY**

2 sh

This course will provide a broad overview of the sport psychology discipline. Major areas of interest will include the motivational theories of sport participation, the factors that influence athletic performance, psychological techniques that can be used to improve sport athletic performance and the social psychology of sport. This course will discuss the theories and applications involved in sport psychology. This course does not fulfill requirements for a major or minor in psychology. Prerequisite: ESS 101 or PSY 111 or permission of instructor. Offered spring even years.

**ESS 443. EXERCISE PSYCHOPHYSIOLOGY**

2 sh

Typically when discussing the benefits of physical activity, the benefits are either classified as being physical or psychological. The objective of this course is to give the student an overview of research and theory that has incorporated a psychophysiological (and in some cases a psychobiological) approach, i.e., an approach which views the interaction between physiological states and psychological states as a reciprocal relationship. This course will focus on the psychophysiology of exercise (e.g., affect [anxiety, depression], sleep, pain, cognitive functioning). Prerequisite: PSY 111 or BIO 162 or permission of the instructor. Offered spring odd years.

- ESS 482. INTERNSHIP IN EXERCISE/SPORT SCIENCE** 4 sh  
 Upper-class exercise/sports science majors select a sports medicine or health-related agency for their internship, a capstone experience. Students serve 160 hours at the agency. Students turn in biweekly reports including a brief discussion of the experience, reflections and a critique of the experience/agency. Students may engage in problem-solving assignments and perform research on some particular topic. Students may also assist with patient/client care and/or training and shadow their supervisor. A research paper is due near the end of the experience. Students should make arrangements with their professors the semester prior to taking the internship. Prerequisites: ESS 281; junior/senior majors; 2.0 GPA overall, 2.0 GPA in major. Offered fall, spring and summer.
- ESS 491. INDEPENDENT STUDY** 1-4 sh
- ESS 499. RESEARCH IN EXERCISE/SPORT SCIENCE** 1-4 sh  
 Independent research project supervised by faculty mentor.

**Finance** (see *ACCOUNTING AND FINANCE*)